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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,627	03/01/2004	Keiichi Kuramoto	4633	3141
21553	7590	03/24/2006	EXAMINER	
FASSE PATENT ATTORNEYS, P.A.			CHOI, LING SIU	
P.O. BOX 726			ART UNIT	
HAMPDEN, ME 04444-0726			PAPER NUMBER	

1713

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/791,627

Applicant(s)

KURAMOTO ET AL.

Examiner

Ling-Siu Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 16-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/346,340.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/1/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

1. This Application is a Division of US Application Serial Number 10/346,340 filed January 16, 2003, now US 6,723,770.

Election/Restriction

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-15, drawn to a multi-layer laminate and an optical waveguide comprising the laminate, classified in class 428, subclass 205 or 209.
 - II. Claims 16-27, drawn to a optical waveguide or a light transmission structure, classified in class 385, subclass 1+.
3. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP ' 806.04, MPEP ' 808.01). In the instant case the different inventions relate to a multi-layer laminate and to an optical waveguide or a light transmission structure.
4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject

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matter, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Mr. Walter F. Fasse on September 1, 2005, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

7. **The following is a quotation of the second paragraph of 35 U.S.C. 112:**

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 11-12, the recitation "a metal element in said metal alkoxide of said respective organic-inorganic composite material" causes confusion. In view of Table 8 and Figure 2, they demonstrates that the refractive index depends on the amount of Si in the inorganic-organic material instead of the amount of Si in the metal alkoxide (Attention is drawn to col. 9, lines 37-41). Furthermore, if the amount of Si refers to the Si content in the metal alkoxide, the laminate would not have a concentration gradient with a varying concentration of the metal element when the metal alkoxide is **reduced** to zero because the "unreacted amount of said metal alkoxide is reduced to no more than 3 vol%" (claim1, lines 6-7).

Claim Analysis

9. Summary of claim 1:

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A multi-layer laminate comprising a plurality of successively stacked layers of respective organic-inorganic composite materials, wherein		
• each of the organic-inorganic composite materials is respectively produced		
1	polycondensation through hydrolysis	the metal alkoxide
until the unreacted metal alkoxide is reduced to 3 vol % or less		
2	mixing	the resulting polycondensated metal alkoxide
		an organic polymer
• the layers respectively have		
different concentrations of a metal element in the respective organic-inorganic composite material such that		
the laminate has a concentration gradient with a varying concentration of the metal element through a thickness of the laminate from a first side to a second side of the laminate		

Claim Rejections - 35 USC § 102/103

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
 (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a) A patent may not be obtained though the invention is not identically disclosed or

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described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Arakawa et al. (US 6,395,341 B1).

Arakawa et al. disclose a multiple layer comprising organic-inorganic hybrid polymer materials with compositional gradient, the organic-inorganic hybrid polymer being obtained hydrolyzing and polycondensation metal alkoxide in the presence of an organic polymer (col. 7, lines 37-51; col. 8, lines 6-22; claim 1). It is noted that the polycondensation of the metal alkoxide through hydrolysis is carried out in the presence of an organic polymer instead of adding the organic polymer to contact with the resulting condensation product until the unreacted metal alkoxide is reduced to no more than 3 vol.%. However, the present claims are drawn to product-by-process claims. The case law held that "The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966(Fed. Cir. 1985). In view of substantially identical reactants being used to make the organic-inorganic composite material, the final product would be identical to the one claimed by the present invention. Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show

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otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

Allowable Subject Matter

13. Claims 1-15 are allowable over the closest references: Ioka et al. (EP 0 997 497 A1), Toki et al. [Polymer Bulletin, **29**, 653-660 (1992)], and Yang et al. [Die Angewandte Makromolekulare Chemie, **251**, 49-60(1997)].

Ioka et al. disclose a multilayer circuit structure for a semiconductor device, comprising an insulating thin film made from an alkoxysilane/organic polymer composition which is obtained by the steps comprising (A) contacting (i) at least one alkoxysilane selected from the group consisting of tetraalkoxysilane, trialkoxysilane, dialkoxidesilane, monoalkoxysilane, and trialkoxysilane dimer, (ii) at least one organic polymer such as an aliphatic polycarbonate, (iii) a solvent, and (iv) at least one acid as a catalyst to form a mixture and (B) subjecting the mixture to the hydrolysis and dehydration-condensation reaction with respect to the entire amount of the alkoxide ([0001]; claims 1, 5, 7, and 8). However, Ioka et al. do not teach or fairly suggest a multiple-layer laminate comprising **each layer having different concentration of silicon** and being obtained by polycondensation of the metal alkoxide through hydrolysis until the **unreacted metal alkoxide is reduced to no more than 3 vol % and then contacting with an organic polymer.**

Toki et al. disclose an organic-inorganic composite material obtained by the

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steps comprising stirring poly(vinylpyrrolidone), tetraethoxysilane, and HCl to form a mixture and then air-drying the mixture to form a transparent hybrid material (page 654 - Experimental). Since no step is required to remove tetraethoxysilane, it is believed that the entire amount of tetraethoxysilane is subjected to a condensation polymerization. However, Toki et al. do not teach or fairly suggest a multiple-layer laminate comprising **each layer having different concentration of silicon** and being obtained by polycondensation of the metal alkoxide through hydrolysis until **the unreacted metal alkoxide is reduced to no more than 3 vol.%, and then contacting with an organic polymer.**

Yang et al. disclose an organic-inorganic composite material obtained by the steps comprising hydrolyzing and condensing tetraethyl orthosilicate in the presence of poly(methylmethacrylate-co-3-(trimethoxysilyl) propyl methacrylate) and an aqueous HCl catalyst (pages 49-50). However, Yang et al. do not teach or fairly suggest a multiple-layer laminate comprising **each layer having different concentration of silicon** and being obtained by polycondensation of the metal alkoxide through hydrolysis until **the unreacted metal alkoxide is reduced to no more than 3 vol.%, and then contacting with an organic polymer.**

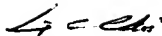
Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-

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1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.



LING-SUI CHOI
PRIMARY EXAMINER

March 15, 2006